

## Claims

- 1        1. A flame retardant polymer composition comprising  
 2  
 3            a) 20 - 60 percent by weight of a thermoplastic  
 4            and/or cross-linked or cross-linkable elastomer  
 5  
 6            and  
 7  
 8            b) as a flame retardant agent 40 - 80 percent by  
 9            weight either of an aluminium hydroxide with the  
 10           material values  
 11  
 12                - specific surface according to BET 3 - 5 m<sup>2</sup>/g  
 13                - mean grain size d<sub>50</sub> 1.0 - 1.5 μm  
 14                - residual moisture 0.1 - 0.4 %  
 15                - oil absorption 19 - 23%  
 16                - water absorption 0.4 - 0.6 ml/g  
 17  
 18           or of an aluminium hydroxide with the material values  
 19                - specific surface according to BET 5 - 8 m<sup>2</sup>/g  
 20                - mean grain size d<sub>50</sub> 0.8 - 1.3 μm  
 21                - residual moisture 0.1 - 0.6 %  
 22                - oil absorption 21 - 25 %  
 23                - water     absorption     0.6     -     0.8     ml/g.

- 1        2. The flame retardant polymer composition of claim 1,  
 2        wherein the aluminum hydroxide has a gibbsite  
 3        structure with, additionally, 0.5 to 1.5 % boehmite.

1 3. A flame retardant polymer composition according to  
2 claim 1, wherein the polymer described under a)  
3 consists of the group of polyolefins , vinyl polymers,  
4 copolymers or terpolymers and grafted  
5 polymethylacrylate, natural and synthetic rubbers and  
6 their mixtures.

1 4. A process for producing a flame retardant agent, the  
2 flame retardant agent comprising

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4 (I) an aluminum hydroxide having:

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6 (i) a BET specific surface area of  $3 - 5 \text{ m}^2/\text{g}$ ,

7 (ii) a mean grain size  $d_{50}$  of  $1.0 - 1.5 \text{ }\mu\text{m}$ ,

8 (iii) a residual moisture of  $0.1 - 0.4 \%$ ,

9 (iv) an oil absorption of  $19 - 23\%$ , and

10 (v) a water absorption of  $0.4 - 0.6 \text{ ml/g}$ ; or

11

12 (II) an aluminum hydroxide having:

13

14 (i) a BET specific surface area of  $5 - 8 \text{ m}^2/\text{g}$ ,

15 (ii) a mean grain size  $d_{50}$  of  $0.8 - 1.3 \text{ }\mu\text{m}$ ,

16 (iii) a residual moisture of  $0.1 - 0.6 \%$ ,

17 (iv) an oil absorption of  $21 - 25 \%$ , and

18 (v) a water absorption of  $0.6 - 0.8 \text{ ml/g}$ ;

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20 comprising mill drying a filter-moist aluminum

21 hydroxide having a mean grain size of  $0.8$  to  $1.5 \text{ }\mu\text{m}$

22 obtained by precipitation and filtration in a

23 turbulent hot air stream.

- 1        5. The process of claim 4, wherein the mill drying is  
2        effected by passing the filter-moist aluminum  
3        hydroxide in a hot air stream at a throughput of 3000-  
4        7000 Bm<sup>3</sup>/h through a rotor rotating at a  
5        circumferential speed of 40 - 140 m/sec, and whirling  
6        the hot air stream at a temperature of 150 - 450 °C at  
7        a Reynolds factor greater than 3000.
- 1        6. The process of claim 5, wherein the circumferential  
2        speed of the rotor is greater than 60 m/sec, thereby  
3        converting agglomerates contained in the filter-moist  
4        aluminum hydroxide into primary crystals.
- 1        7. The process of claim 6, wherein the energy introduced  
2        in the hot air stream is in excess of 5000 Bm<sup>3</sup>/h, at a  
3        temperature greater than 270°C and a circumferential  
4        speed of the rotor greater than 70m/sec, thereby  
5        converting the gibbsite particles on the surface of  
6        the flame retardant agent into boehmite.
- 1        8. A method of producing coated electrical conductors and  
2        cables comprising extruding the flame retardant  
3        polymer composition of claim 1.
- 1        9. The method of claim 4 wherein after mill drying, the  
2        filter-moist aluminum hydroxide grain distribution is  
3        largely retained, and the BET surface is increased by  
4        at least 20 %.
- 1        10. The composition of claim 3, wherein the melt flow  
2        index of the polymer composition is increased by at  
3        least 20 % compared to standard aluminum hydroxides.